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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/529,397	03/28/2005	Soren Flygenring Christensen	CHRISTENSEN12	6716
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			1639	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)			
	10/529,397	CHRISTENSEN ET AL.			
Office Action Summary	Examiner	Art Unit			
	AMBER D. STEELE	1639			
The MAILING DATE of this communication appears on the cover sheet with the correspondence address Period for Reply					
A SHORTENED STATUTORY PERIOD FOR REPL WHICHEVER IS LONGER, FROM THE MAILING D - Extensions of time may be available under the provisions of 37 CFR 1.1 after SIX (6) MONTHS from the mailing date of this communication. - If NO period for reply is specified above, the maximum statutory period - Failure to reply within the set or extended period for reply will, by statute Any reply received by the Office later than three months after the mailin earned patent term adjustment. See 37 CFR 1.704(b).	ATE OF THIS COMMUNICATION 136(a). In no event, however, may a reply be tinwill apply and will expire SIX (6) MONTHS from e, cause the application to become ABANDONE	N. nely filed the mailing date of this communication. D (35 U.S.C. § 133).			
Status					
1) Responsive to communication(s) filed on 10 S	s action is non-final. ince except for formal matters, pro	osecution as to the merits is			
Disposition of Claims					
4) Claim(s) 2-40 and 42-102 is/are pending in the 4a) Of the above claim(s) 4-6,13-16 and 43-10 5) Claim(s) is/are allowed. 6) Claim(s) 2, 3, 7-12, 17-40 and 42 is/are rejected to claim(s) is/are objected to. 8) Claim(s) are subject to restriction and/or are subject to restriction and/or are subject to restriction and/or are subject to by the Examine 10) The specification is objected to by the Examine 10) The drawing(s) filed on 9/10/08 is/are: a) are applicant may not request that any objection to the Replacement drawing sheet(s) including the correct 11) The oath or declaration is objected to by the Examine 11.	ed. or election requirement. er. ccepted or b) □ objected to by the drawing(s) be held in abeyance. See tion is required if the drawing(s) is objected to by the drawing(s) is objected to by the drawing(s) is objected to by the drawing(s) be held in abeyance.	e Examiner. e 37 CFR 1.85(a). jected to. See 37 CFR 1.121(d).			
Priority under 35 U.S.C. § 119					
 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f). a) All b) Some * c) None of: 1. Certified copies of the priority documents have been received. 2. Certified copies of the priority documents have been received in Application No 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)). * See the attached detailed Office action for a list of the certified copies not received. 					
Attachment(s) 1) Notice of References Cited (PTO-892) Notice of Draftsperson's Patent Drawing Review (PTO-948) 3) Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date 7/21/09, 1/13/09. 4) Interview Summary (PTO-413) Paper No(s)/Mail Date 5) Notice of Informal Patent Application 6) Other:					

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DETAILED ACTION

Status of the Claims

1. Claims 1-119 were originally filed on March 28, 2005.

A preliminary amendment received on January 27, 2006 amended claims 1-32, 38, 40-43, 46, 48, 49, 53, 55-62, 64-75, 77, 79, 81, 83-86, 91, 93, and 96-101. It is noted that this claim set only contains claims 1-102. Applicants are respectfully requested to advise the examiner of the status of claims 103-119.

The amendment to the claims received on September 10, 2008 canceled claims 1 and 41, amended claims 2-32, 38, 46, 49, 53, 60, 75, 79, and 85, and added "new" claims 103-105.

Applicants are respectfully requested to advise the examiner of the status of claims 106-119.

The amendment to the claims received on January 8, 2009 canceled claims 103-105.

Again, applicants are respectfully requested to advise the examiner of the status of claims 106
119.

Claims 2-40 and 43-102 are currently pending.

Claims 2, 3, 7-12, 17-40, and 42 are currently under consideration.

Election/Restrictions

2. Applicants elected, with traverse, Group II (claims 32-42; please note: Group I, claims 2-31, is rejoined due to the claim amendments received on September 10, 2008 and the petition decision mailed on May 15, 2009) in the reply filed on January 17, 2008. Claims 43-102 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to nonelected inventions, there being no allowable generic or linking claim.

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3. Applicants elected, with traverse, the species of at least 10² beads, the species of monodisperse as the species of dispersion, essentially spherical as the species of particle shape, 4 to 10 particles as the species of number of particles, essentially the same diameter as the species of diameter, spectroscopically detectable marker as the species of marker, probing with frequencies as the species of detection, and optically transparent as the species of polymer in the reply filed on January 17, 2008 is acknowledged. Claims 4-6 and 13-16 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim.

Please note: in the petition decision mailed on May 15, 2009, QAS Julie Burke and authorized by acting Director Michael Wityshyn clearly state on the record that the species of particle number, marker, detection, and polymer are all obvious variants of each other.

Therefore, any species listed or found in the art for one species is an obvious variant of another species for all claimed particle numbers, markers, forms of detection, and polymers. If applicants disagree, applicants are respectfully requested to state the reasons for disagreeing clearly on the record which may result in withdrawal of claims to nonelected species.

Potential for Rejoinder

4. Applicants elected claims directed to the product. If a product claim is subsequently found allowable, withdrawn process claims that **depend from or otherwise include** <u>all</u> the **limitations of the allowable product claim** will be rejoined in accordance with the provisions of MPEP § 821.04. Process claims that depend from or otherwise include all the limitations of the patentable product will be entered as a matter of right if the amendment is presented prior to final rejection or allowance, whichever is earlier. Amendments submitted after final rejection are

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governed by 37 CFR 1.116; amendments submitted after allowance are governed by 37 CFR 1.312.

In the event of rejoinder, the requirement for restriction between the product claims and the rejoined process claims will be withdrawn, and the rejoined process claims will be fully examined for patentability in accordance with 37 CFR 1.104. Thus, to be allowable, the rejoined claims must meet all the criteria for patentability including the requirements of 35 U.S.C. 101, 102, 103, and 112. Until an elected product claim is found allowable, an otherwise proper restriction requirement between product claims and process claims may be maintained. Withdrawn process claims that are not commensurate in scope with an allowed product claim will not be rejoined. See "Guidance on Treatment of Product and Process Claims in light of In re Ochiai, In re Brouwer and 35 U.S.C. § 103(b)," 1184 O.G. 86 (March 26, 1996). Additionally, in order to retain the right to rejoinder in accordance with the above policy, applicant is advised that the process claims should be amended during prosecution either to maintain dependency on the product claims or to otherwise include the limitations of the product claims. Failure to do so may result in a loss of the right to a rejoinder. Further, note that the prohibition against double patenting rejections of 35 U.S.C. 121 does not apply where the restriction requirement is withdrawn by the examiner before the patent issues. See MPEP § 804.01.

Priority

5. The present application claims status as a National Stage (i.e. 371) of PCT/DK03/00635 filed on September 26, 2003 which claims benefit of U.S. provisional applications 60/482,453 filed on June 26, 2003 and 60/413,771 filed September 27, 2002. In addition, the present

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application claims foreign priority to PA 2003 00969 filed June 26, 2003 and PA 2002 01444 filed September 27, 2002.

- 6. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.
- 7. The later-filed application must be an application for a patent for an invention which is also disclosed in the prior application (the parent or original nonprovisional application or provisional application). The disclosure of the invention in the parent application and in the later-filed application must be sufficient to comply with the requirements of the first paragraph of 35 U.S.C. 112. See *Transco Products, Inc. v. Performance Contracting, Inc.*, 38 F.3d 551, 32 USPO2d 1077 (Fed. Cir. 1994).

The disclosure of the prior-filed application, provisional Application Nos. 60/413,771 and 60/482,453; PCT/DK03/00635; and foreign applications PA 2002 01444 and PA 2003 00969, fails to provide adequate support or enablement in the manner provided by the first paragraph of 35 U.S.C. 112 for one or more claims of this application. The limitations of independent claim 32 and all dependent claims particularly dependent claims 7-9, 19-20, 32, and 38-40. Therefore, the claims have a priority date of March 28, 2005 (i.e. filing date of the present specification).

Information Disclosure Statement

8. The information disclosure statements (IDS) submitted on July 21, 2009 and January 13, 2009 being considered by the examiner.

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Invention as Claimed

9. A composition comprising a plurality of different, spatially encoded beads, wherein essentially each bead is individually identifiable, wherein each bead has a diameter of from 0.5 millimeter to less than 2.0 millimeter, and comprises from 3 to not more than 10 spatially immobilized, individually detectable particles held in a polymer matrix, wherein the diameter of the particles is less than 30 micrometer and variations thereof.

10. Regarding the methods of detection (see claims 21-23 and 27-31), the limitations are considered either inherent properties (i.e. any fluorescent marker can be detected by any means of fluorescence) or are intended use limitations (see MPEP § 2112 and § 2106).

Withdrawn Objections

- 11. The objection to the drawings regarding the description is withdrawn in view of the amendment to the specification received on September 10, 2008.
- 12. The objection to claims 32-33 and 38-42 is withdrawn in view of the claim amendments received on September 10, 2008.
- 13. The objection to claim 41 is withdrawn in view of the claim amendments received on September 10, 2008.

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15.

beads". Appropriate correction is required.

New Objections

Claim Objections

14. Claim 32 and all dependent claims thereof are objected to because of the following informalities: "different, spatially encoded, beads" should read "different, spatially encoded

improper Markush language. See MPEP § 2173.05(h). Appropriate correction is required.

Claim 19 is objected to because of the following informalities: the claim contains

16. Claim 20 is objected to because of the following informalities: the claim contains

improper Markush language. See MPEP § 2173.05(h). Appropriate correction is required.

17. Claim 25 is objected to because of the following informalities: the claim contains

inadequate punctuation (i.e. commas missing). Appropriate correction is required.

Withdrawn Rejections

18. The rejection of claims 38 and 42 are rejected under 35 U.S.C. 112, second paragraph, as

being indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention is withdrawn in view of the claim amendments received on

September 10, 2008.

19. The rejection of claims 32 and 38-42 under 35 U.S.C. 102(a) as being anticipated by

Miranda et al. SPOCC-194, a New High Functional Group Density PEG-Based Resin for Solid-

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Phase Organic Synthesis J. Comb. Chem. 4: 523-529, 2002 (published August 10, 2002) is withdrawn in view of the claim amendments received on September 10, 2008.

- 20. The rejection of claims 32 and 38-42 under 35 U.S.C. 102(b) as being anticipated by Strathmann et al. Artificial biofilm model a useful tool for biofilm research Appl. Microbiol. Biotechnol. 54: 231-237, 2000 is withdrawn in view of the claim amendments received on September 10, 2008.
- 21. The rejection of claims 32 and 38-42 under 35 U.S.C. 102(e) as being anticipated by Grotli et al. U.S. Patent 6,642,334 (effective filing date of July 9, 2001) is withdrawn in view of the claim amendments received on September 10, 2008.
- 22. The rejection of claims 32-33 and 38-42 under 35 U.S.C. 103(a) as being obvious over Grotli et al. U.S. Patent 6,642,334 (effective filing date of July 9, 2001) and Seul et al. U.S. Patent 7,156,315 (effective filing date of April 25, 1996) is withdrawn in view of the claim amendments received on September 10, 2008.

New Rejections

Claim Rejections - 35 USC § 112

23. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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24. Claims 2, 3, 7-12, 17-40, and 42 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a **new matter** rejection. Applicants have failed to indicate where support in the originally filed specification is for the amendment received on January 27, 2006 regarding "wherein the diameter of the particles is less than 30 micrometer".

- 25. The following is a quotation of the second paragraph of 35 U.S.C. 112:
 The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
- 26. Claims 2, 3, 7-12, 17-40, and 42 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. One of skill in the art would not be able to determine the scope of the presently claimed invention. For example, claim 32 reads "essentially each bead is individually identifiable"; claim 10 reads "essentially spherical"; claim 11 reads "essentially the same diameter"; claim 12 reads "essentially monodisperse". It is not clear what the metes and bounds of "essentially" are.
- 27. Claim 19 contains the trademark/trade name AlexaTM and DapoxylTM. Where a trademark or trade name is used in a claim as a limitation to identify or describe a particular material or product, the claim does not comply with the requirements of 35 U.S.C. 112, second paragraph. See *Ex parte Simpson*, 218 USPQ 1020 (Bd. App. 1982). The claim scope is

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uncertain since the trademark or trade name cannot be used properly to identify any particular material or product. A trademark or trade name is used to identify a source of goods, and not the goods themselves. Thus, a trademark or trade name does not identify or describe the goods associated with the trademark or trade name. In the present case, the trademark/trade name is used to identify/describe markers and, accordingly, the identification/description is indefinite.

Claim Rejections - 35 USC § 102

28. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

29. Claims 2, 3, 7-12, 17-32, 38-40, and 42 are rejected under 35 U.S.C. 102(b) as anticipated by Trau et al. WO 99/24458 published May 20, 1999 (provided by applicants in the IDS).

For present claims 2, 3, 7-12, 17-32, 38-40, and 42 Trau et al. teach compositions comprising polymer carriers (i.e. beads) wherein each polymer carrier has a diameter of 1-1000 µm (i.e. 0.5 mm to 2 mm) and comprises at least one reporter bead (i.e. essentially spherical) or microparticle (i.e. 3 to 10) spatially immobilized wherein the reporter bead or microparticle is 0.01 to 50 µm in diameter and contains fluorescent markers (see fluorescent markers incorporated by reference on pages 17 and 18) and wherein the carrier contains linkers (i.e. reactive group or scaffold) to attach oligos (bioactive species) (please refer to the entire specification particularly the abstract; pages 6-12, 15-19, 23-24, 27-28; Examples; Figures 6-14).

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Therefore, the teachings of Trau et al. anticipate the presently claimed method.

Claim Rejections - 35 USC § 103

30. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
- 31. Claims 2, 3, 7-12, 17-40, and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Trau et al. WO 99/24458 published May 20, 1999 (provided by applicants in the IDS) and Frankel U.S. Patent 6,506,342 (issued January 14, 2003; filed May 15, 2000; effective filing date of June 19, 1997).

For present claims 2, 3, 7-12, 17-32, 38-40, and 42 Trau et al. teach compositions comprising polymer carriers (i.e. beads) wherein each polymer carrier has a diameter of 1-1000 µm (i.e. 0.5 mm to 2 mm) and comprises at least one reporter bead (i.e. essentially spherical) or microparticle (i.e. 3 to 10) spatially immobilized wherein the reporter bead or microparticle is 0.01 to 50 µm in diameter and contains fluorescent markers (see fluorescent markers incorporated by reference on pages 17 and 18) and wherein the carrier contains linkers (i.e. reactive group or scaffold) to attach oligos (bioactive species) (please refer to the entire specification particularly the abstract; pages 6-12, 15-19, 23-24, 27-28; Examples; Figures 6-14).

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However, Trau et al. does not teach a specific number of carriers.

For present claims 33-37. Frankel teaches bead libraries comprising 10²-10⁶ beads. greater than 10⁸ beads, or greater than 10⁹ beads (see the entire specification particularly columns 2 and 9).

The claims would have been obvious because the substitution of one known element (i.e. carrier population of unknown size taught by Trau et al.) for another (i.e. bead library of greater than 10⁹ beads as taught by Frankel) would have yielded predictable results (e.g. large library size, more specifically identifiable beads, etc.) to one of ordinary skill in the art at the time of the invention. See KSR International Co. v. Teleflex Inc., 82 USPQ2d 1385 (U.S. 2007).

32. Claims 7-11, 25, 26, 32, 38-40, and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nilsson et al. U.S. Patent 5,015,576 issued May 14, 1991.

For present claims 7-11, 25, 26, 32, 38-40, and 42, Nilsson et al. teach particles or macroporous beads which enclose cavities comprising water-insoluble solid, liquid, gaseous cavity generating compound, or cells (i.e. particles) wherein the size of each particle is 10 to 5000 μm, the diameter of the cavities are 1 to 50 μm, the polymer utilized is polyacrylamide, and the cavities can be coated with fibronectin, etc. (reactive group or scaffold) to attach the cells (i.e. bioactive species; please refer to the entire specification particularly the abstract; column 3; Examples).

The claims would have been obvious because the substitution of one known element (i.e. unknown number of particles and specific polymer taught by Nilsson et al.) for another (i.e. another particle number or another polymer; see petition decision by Julie Burke wherein QAS

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Burke stated that all particle numbers and polymers would be obvious variants) would have yielded predictable results (e.g. specific number of particles per bead, specific polymer utilized to produce beads) to one of ordinary skill in the art at the time of the invention. See *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385 (U.S. 2007).

Maintained Rejections

Double Patenting

33. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321© or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

34. Claims 2, 3, 7-12, 17-40, and 42 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 3-10 and 59 of copending Application No. 11/631,181. Although the conflicting claims are not identical, they are not patentably distinct from each other because both the presently claimed invention and the invention as claimed in U.S. application 11/631,181 are drawn to a composition of spatially encoded beads.

For present claims 32 and 41, U.S. application 11/631,181 claims a mcomposition comprising a plurality of spherical beads with a radiofrequency chip embedded wherein essentially each of said beads is individually identifiable (please refer to claim 3).

For present claims 38-40, U.S. application 11/631,181 claims hydrophilic moieties (i.e. functionalisation site), surface polyethers, surface polyvinyls, surface polyacrylates, surface polyacrylamides polyacrylamides, surface polystyrenes, surface polycarbonates, surface polyesters, and surface polyamides (please refer to claims 4-6).

This is a <u>provisional</u> obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Arguments and Response

35. Applicants' arguments directed to the rejection on the ground of nonstatutory obviousness-type double patenting as being unpatentable over 11/631,181 for claims 2, 3, 7-12, 17-40, and 42 were considered but are not persuasive for the following reasons.

Applicants request that the rejection be held in abeyance.

Applicants' arguments are not convincing since the claimed invention of 11/631,181 renders obvious the invention of the instant claims. In addition, while a request may be made that objections or requirements as to form not necessary to further consideration of the claims be held in abeyance until allowable subject matter is indicated, the present is a rejection and will not be held in abeyance (see MPEP § 714.02).

36. Claims 2, 3, 7-12, 17-40, and 42 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 94 and 96 of copending

Application No. 10/566,757. Although the conflicting claims are not identical, they are not patentably distinct from each other because both the presently claimed invention and the invention as claimed in U.S. application 10/566,757 are drawn to a beaded polymer matrix comprising beads with a plurality of spatially immobilized particles.

For present claims 32 and 41, U.S. application 10/566,757 claims a beaded polymer matrix comprising beads with a plurality of spatially immobilized particles wherein each particle comprises at least one fluorescent dye compound and wherein each particle is individually detectable (please refer to claims 94 and 96).

This is a <u>provisional</u> obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Arguments and Response

37. Applicants' arguments directed to the rejection on the ground of nonstatutory obviousness-type double patenting as being unpatentable over 10/566,757 for claims 2, 3, 7-12, 17-40, and 42 were considered but are not persuasive for the following reasons.

Applicants request that the rejection be held in abeyance.

Applicants' arguments are not convincing since the claimed invention of 10/566,757 renders obvious the invention of the instant claims. In addition, while a request may be made that objections or requirements as to form not necessary to further consideration of the claims be held in abeyance until allowable subject matter is indicated, the present is a rejection and will not be held in abeyance (see MPEP § 714.02).

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Future Communications

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AMBER D. STEELE whose telephone number is (571)272-5538. The examiner can normally be reached on Monday through Friday 9:00AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Low can be reached on 571-272-0951. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Amber D. Steele/ Primary Examiner, Art Unit 1639